

## Broadband cable-TV and in-home networks (E012802)

Course size (nominal values; actual values may depend on programme)

Credits 4.0 Study time 120 h Contact hrs 45.0 h

Course offerings and teaching methods in academic year 2017-2018

A (semester 1) English practicum 18.75 h

Lecturers in academic year 2017-2018

Martens, Luc TW05 lecturer-in-charge  
Deruyck, Margot TW05 co-lecturer

Offered in the following programmes in 2017-2018

	crdts	offering
<a href="#">Master of Science in Electrical Engineering (main subject Communication and Information Technology)</a>	4	A
<a href="#">Master of Science in Computer Science Engineering</a>	4	A
<a href="#">Master of Science in Computer Science Engineering</a>	4	A

Teaching languages

English

Keywords

Broadband cable-TV network, interactive digital TV, data and telephony standard, security, network capacity, comparison alternative networks (xDSL, FTTx), home networks

Position of the course

The course follows the bachelor course "Communication networks" and applies the techniques acquired in this course to the services (data, telephony, video and TV) on the broadband cable-TV network and home network.

- Obtaining insight in the modern telecommunication technology by learning how this is implemented in practice in a broadband cable-TV network and home network.
- Learning to apply the acquired understanding in theoretical and practical exercises and study and presentation of a paper literature.
- Comparing with alternative networks (xDSL, FTTx) with respect to advantages and disadvantages.

It contributes to the skills regarding communication networks and protocols a master in computer sciences and electrotechnical engineering is expected to have.

Contents

- Architecture of the broadband cable-TV network: Evolution from coax to broadband cable-TV network, Electrical and optical components
- Data on the broadband cable-TV network: Physical and MAC layer standard: (Euro) DOCSIS, QoS and Data security in the broadband cable-TV network
- Interactive digital TV: DVB standard, MHP standard, Architecture for interactive digital television, Switched Digital Broadcast, IPTV
- Telephony on the broadband cable-TV network: Classic telephony, VoIP standard: (Euro)PacketCable
- Network capacity of a cable-TV network
- Comparison with other networks: xDSL, FTTx
- Home networks: architecture and standards, Wi-Fi in home

Initial competences

Having followed with success the bachelor course "Communication Networks" or having acquired the envisaged competences through an alternative way.

Final competences

- 1 Being able to relate the services on a telecommunication network to underlying protocols.
- 2 Have insight in the different aspects such as QoS, security, capacity related to services on the broadband cable-TV network and home network.
- 3 Being able to design cable TV-networks regarding capacity.
- 4 Being able to design applications for interactive digital TV.
- 5 Estimate the pros and cons of classic digital TV, IPTV and mobile TV.
- 6 Being able to critically study in a small group a paper from literature
- 7 Being able to present in English the essence of a technical article in a comprehensible way

#### Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

#### Conditions for exam contract

This course unit cannot be taken via an exam contract

#### Teaching methods

Lecture, practicum, lecture: plenary exercises

#### Extra information on the teaching methods

Lectures: to discuss with the students the content of the slides  
Lab sessions: exercises with a cable modem connected to a cable modem termination system  
Presentation of a paper from technical literature (after study of the paper in a small group)

#### Learning materials and price

slides with notes

#### References

#### Course content-related study coaching

Interactive support through Minerva (forum, e-mail) personal: through electronic appointment

#### Evaluation methods

end-of-term evaluation and continuous assessment

#### Examination methods in case of periodic evaluation during the first examination period

Written examination, open book examination

#### Examination methods in case of periodic evaluation during the second examination period

Written examination, open book examination

#### Examination methods in case of permanent evaluation

Skills test, report

#### Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

#### Extra information on the examination methods

During examination period: written open-book exam.  
During semester: graded lab sessions; graded paper presentation.

#### Calculation of the examination mark

50% open-book exam, 50% on lab sessions and paper presentation